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Earth System Dynamics
Discussions

Interactive comment on "Weakening anomalies of East Asian Summer Precipitation Influenced by the Tibetan Plateau Warming Amplification" *by* Mei Liang et al.

Anonymous Referee #3

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The paper establishes 1) that the warming in the TP is elevation dependent and this warming is higher than the rate generally quoted for global warming, 2) The TP elevation-dependent warming is treated as a simple warming source for forcing precipitation variations in China and SE Asia, and 3) diagnose the changes of precipitation pattern in terms of circulation changes. It contributes to the understanding of the impact of TP in forcing the north-dry south-wet moisture pattern in China. The writing is understandable but clearly needs improvement. The approach uses linear regression for the trends and regression coefficients for examining relations. Vigor is lacking in some discussions, especially in the correlation fields. Two concerns on the paper: 1) to examine the impact of the TP warming, correlation pattern with and without the TP

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trend is compared. It is not clear why the variance of due to the “total” TP time series is removed? 2) There are discussions on the relation of TP warming on global warming. The linkage has not been explicitly discussed. So jumping to the conclusion of the “most sensitive” feature is not warranted. There are inappropriate usage of the English language some of which I have tried to document below. I recommend publication after a rewrite to improve readability.

Minor comments: In Abstract Line 23 rewrite as: The present study documents the <effect of elevation-dependent temperature changes > on East Asian precipitation in summer over the Tibetan Plateau (TP). Line 25 Change <altitude> to <elevation>; Note: elevation refers to a place above sea level, altitude indicates an object above sea level. Line 26 change <troposphere> to <standard tropospheric lapse rate>. Delete <magnitude of the> and add <trend> after temperature. Line 28 change <the> to <an> Line 29 change <relations> to <impact>, change <amplify> to <increases> Line 30 change <weak> to <weaken> , delete <compared with> Line 31 delete “ amplification” Line 32 “rate of” Line 103 is “the coupling of the circulation and large scale terrain” sensitive to . . . Line 110 indicate if this is GMT or Beijing time. Change at the “cumulative time” to “ average over the period . . . Line 140 change “including” to “it includes” simply references to linear regression. It has been widely used in meteorological statistical applications what is the purpose of quoting these examples, such as NDVI using linear regression? Delete these references unless you will refer to them later in the text. see Wilkes Line 170 compute the SD for these two periods to enable a quantitative comparison. Line 176 include “area” after “monsoon” Line 187 change altitude to elevation. Note: Lapse rate is the decrease in temperature with height. Change “tropospheric atmosphere” to “troposphere.” Line 191 change altitude to elevation Line 204 change fitting to fits Line 206 how does this observation relates to global warming? State how did you show that this temperature change is due to global warming? Line 220 add “fit” after curve Line 221 change than to “compared to” Line 223 what is the unit of the SD? Again change altitude to elevation Lin 225 change to read “there are no significant differences between 0-2000m and 2000-4000m layer changes Line 233 again global

warming is invoked here, what is the supporting argument that this is due to global warming? Is there model simulation that show the magnification of the surface warming in the TP region? Even with supporting GHG simulation, one can only conclude that the data support the simulation? Line 237 add “change using” after “precipitation. Just state the means and SDs of the normal distribution fit. You can use a t test to check if there is a significant difference. Line 240 change “present” to “showing” Line 241,242 what is meant by “above normal and pronounce?” is it simply “higher?” Line 252 change “stronger” and “weaker” to “higher” and “lower” Line 258 change Regression to Relation, replace the first sentence with “Summer precipitation in East Asia has been regressed against the regional-average temperature (see Fig 1b) and the regression coefficients are presented in Figure 5. Line 275 by change to read “removing the linear trend of temperature,” and delete “change.” Why only the trend is removed and not the trend itself? Line 280 weak to weaker Line 309 “change is” to “has” Line 320 how do you do linear fitting of the wind field? Are these streamlines? line 360 are these vector fields significant? Should probably not include any points when the correlation is not significant. Line 383 the link between the TP warming and global warming is not clear. Also make changes in the figure captions to correspond to those in the text.

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